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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,114	10/04/2005	Joseph B. Kejha	1420P	4083
7590 Zachary T Wobensmith III 7746 101st Court Vero Beach, FL 32967-2871				
EXAMINER				
DOVE, TRACY MAE				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
01/14/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/552,114

Applicant(s)

KEJHA ET AL.

Examiner

TRACY DOVE

Art Unit

1795

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 1, 3, 4 and 6-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 5, 11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the communication filed on 10/2/09. Claims 1-12 are pending with claims 1, 3, 4 and 6-10 being withdrawn.

Election/Restrictions

Applicant's election with traverse of claims 2, 5, 11 and 12 in the reply filed on 10/2/09 is acknowledged.

Claims 1, 3, 4 and 6-10 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10/2/09. Applicant provided no specific arguments regarding the traversal, thus, there is nothing for the Examiner to rebut.

Claim Objections

Claim 12 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim. See MPEP § 608.01(n). Accordingly, claim 12 will be examined as if it depended from claim 2 alone.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 5, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the mixture". There is insufficient antecedent basis for this limitation in the claim. Claim 5 recites the limitation "the mixture". There is insufficient antecedent basis for this limitation in the claim. Furthermore, claims 2 and 5 should be amended to recite "a solvent mixture of" to clearly state the weight percentages claimed regard the weight as a percentage of the total solvent mixture (not the electrolyte composition).

Claim 11 recites "to which said LiBF_4 salt has at least one other lithium salt added thereto", which is indefinite. The at least one other lithium salt is not "added" to LiBF_4 , but is further added to the electrolyte composition.

Claim 12 should be amended to recite "A lithium-ion electrochemical device comprising a cathode including a lithium compound additive and the fire resistant stable electrolyte of claim...".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 5 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Akashi, EP 0724305.

Akashi teaches a gel electrolyte and a lithium secondary cell using the gel electrolyte. The cell includes a positive electrode which may be a lithium/transition metal composite oxide, a negative electrode which may be a carbonaceous material

such as graphite and the gel electrolyte (5:8:16). The non-aqueous solvent and the electrolyte salt used for the production of the gel electrolyte may be those generally used for the production of a lithium secondary cell. The solvent may preferably be ethylene carbonate (EC), propylene carbonate (PC), γ -butyl lactone or mixtures thereof. A solvent mixture containing EC and PC in combination is preferred (4:1-12). A molar ratio of a monomer as a repeating unit of the PAN to the non-aqueous solvent is suitably in the range of 5:95 to 30:70 though it varies depending upon kinds of the non-aqueous solvent, the gelling agent and the electrolyte salt used. Note the PAN is not a solvent, but is the polymer of the gel electrolyte. The lithium salt may be in a concentration of 0.4 to 2 M (4:13-17; 31-32). Table 4 teaches the electrolyte salt may be LiBF_4 and the solvent mixture contains 75% of EC and 25% of PC. See also Tables 1 & 2. Page 2, lines 26-27 discloses LiBF_4 and LiPF_6 are conventional electrolyte salts for use in lithium secondary cells. Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akashi EP 0724305 in view of Yde-Andersen et al. US 6,346,351.

Akashi teaches a gel electrolyte and a lithium secondary cell using the gel electrolyte. The cell includes a positive electrode which may be a lithium/transition

metal composite oxide, a negative electrode which may be a carbonaceous material such as graphite and the gel electrolyte (5:8:16). The non-aqueous solvent and the electrolyte salt used for the production of the gel electrolyte may be those generally used for the production of a lithium secondary cell. The solvent may preferably be ethylene carbonate (EC), propylene carbonate (PC), γ -butyl lactone or mixtures thereof. A solvent mixture containing EC and PC in combination is preferred (4:1-12). A molar ratio of a monomer as a repeating unit of the PAN to the non-aqueous solvent is suitably in the range of 5:95 to 30:70 though it varies depending upon kinds of the non-aqueous solvent, the gelling agent and the electrolyte salt used. Note the PAN is not a solvent, but is the polymer of the gel electrolyte. The lithium salt may be in a concentration of 0.4 to 2 M (4:13-17; 31-32). Table 4 teaches the electrolyte salt may be LiBF_4 and the solvent mixture contains 75% of EC and 25% of PC. See also Tables 1 and 2. Page 2, lines 26-27 discloses LiBF_4 and LiPF_6 are conventional electrolyte salts for use in lithium secondary cells.

Akashi does not explicitly teach a combination of LiBF_4 and another electrolyte salt. However, Yde-Andersen teaches a lithium salt/carbonate electrolyte system for use in a lithium battery. The electrolyte includes a salt mixture and a solvent mixture. The salt mixture includes 60-90% LiBF_4 and 10-40% LiPF_6 (abstract). The salt mixture is present in a total concentration in the range from 0-3M, preferably 0.1-2M, more preferably 0.5-1.5M (4:20-28). Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Yde-Andersen teaches salt compositions containing 60-90% LiBF_4 and 10-

40% LiPF_6 result in high cyclability, low initial irreversible loss, high compatibility of the borate against the positive electrode and the phosphate contributes to the electrolyte conductivity (2:14-26). One of skill would have been motivated to provide the electrolyte salt composition of Yde-Andersen for the electrolyte salt of Akashi to improve the cyclability, initial irreversible loss, compatibility of the borate against the positive electrode and the electrolyte conductivity, as taught by Yde-Andersen.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday & Tuesday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 12, 2010
/TRACY DOVE/
Primary Examiner, Art Unit 1795